

WHAT IS CLAIMED IS:

1. A high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the
5 luminous bulb,

wherein at least one of the sealing portions has a first glass portion extending from the luminous bulb and a second glass portion provided at least in a portion inside the first glass portion, and the one of the sealing portions has a portion to which a compressive stress is applied, and

- 10 a heat-retaining film made of an insulating material or a heat-retaining material is provided at least in a portion of the luminous bulb and the pair of sealing portions.

2. The high pressure mercury lamp according to claim 1, wherein an amount of the enclosed mercury is 230 mg/cm^3 or more based on a volume of the luminous bulb.

15

3. The high pressure mercury lamp according to claim 1, wherein

an amount of the enclosed mercury is 300 mg/cm^3 or more based on a volume of the luminous bulb,

halogen is enclosed in the luminous bulb, and

- 20 a bulb wall load of the high pressure mercury lamp is 80 W/cm^2 or more.

4. The high pressure mercury lamp according to claim 1, wherein

the heat-retaining film is not formed in the luminous bulb, and formed at least in one of the pair of sealing portions, and

- 25 an end face of the heat-retaining film on a side of the luminous bulb is positioned apart from a border between the at least one of the sealing portions and the luminous bulb by 1 mm or more.

5. The high pressure mercury lamp according to claim 4, wherein
the end face of the heat-retaining film on the side of the luminous bulb is positioned
within 10 mm from the border.

5

6. The high pressure mercury lamp according to claim 1, wherein
the heat-retaining film is made of alumina.

7. A high pressure mercury lamp comprising a luminous bulb in which at least mercury is
10 enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the
luminous bulb,

wherein at least one of the sealing portions has a first glass portion extending from
the luminous bulb and a second glass portion provided at least in a portion inside the first
glass portion, and the one of the sealing portions has a portion to which a compressive stress
15 is applied, and

an outer tube made of a translucent material is provided around the luminous bulb
such that the outer tube is apart from the luminous tube.

8. The high pressure mercury lamp according to claim 7, wherein
20 an infrared reflecting film is formed in the outer tube.

9. The high pressure mercury lamp according to claim 1 or 7, wherein
a pair of electrode rods are opposed to each other in the luminous bulb,
at least one of the pair of electrode rods is connected to a metal foil, and
25 the metal foil is provided in the sealing portion, and at least a portion of the metal
foil is positioned in the second glass portion.

10. The high pressure mercury lamp according to claim 9, wherein

a coil having at least one metal selected from the group consisting of Pt, Ir, Rh, Ru, and Re at least on its surface is wound around at least in a portion of the electrode rod that is buried in the at least one of the sealing portions.

5

11. The high pressure mercury lamp according to claim 1 or 7, wherein

a metal portion that is in contact with the second glass portion and supplies power is provided in the sealing portions,

the compressive stress is applied at least in a longitudinal direction of the sealing

10 portions,

the first glass portion contains 99 wt% or more of SiO_2 , and

the second glass portion contains SiO_2 and at least one of 15 wt% or less of Al_2O_3 and 4 wt% or less of B.

15 12. A high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb and a pair of electrode rods are opposed, and a pair of sealing portions extending from the luminous bulb, wherein

a coil having at least one metal selected from the group consisting of Pt, Ir, Rh, Ru, and Re at least on its surface is wound around at least in a portion of the electrode rod that is
20 buried in at least one of the sealing portions, and

a heat-retaining film made of an insulating material or a heat-retaining material is formed at least in a portion of the luminous bulb and the pair of sealing portions.

13. A high pressure mercury lamp comprising a luminous bulb in which at least mercury
25 is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of the luminous bulb, wherein

an amount of the enclosed mercury is 230 mg/cm^3 or more based on a volume of

the luminous bulb, and

the high pressure mercury lamp further comprising heat-retaining means for retaining heat in the luminous bulb.

5 14. The high pressure mercury lamp according to claim 13, wherein

the heat-retaining means is a heat-retaining film that is formed at least in a portion of the luminous bulb and the pair of sealing portions, and is made of an insulating material or a heat-retaining material.

10 15. The high pressure mercury lamp according to claim 13, wherein

the heat-retaining means is an outer tube that is provided around the luminous bulb such that the outer tube is apart from the luminous bulb, and is made of a translucent material.

15 16. The high pressure mercury lamp according to any one of claims 10 or 12, wherein

an amount of the enclosed mercury is 300 mg/cm^3 or more based on a volume of the luminous bulb,

halogen is enclosed in the luminous bulb, and

a bulb wall load of the high pressure mercury lamp is 80 W/cm^2 or more.

20

17. A lamp unit comprising a high pressure mercury lamp and a reflecting mirror for reflecting light emitted from the high pressure mercury lamp,

the high pressure mercury lamp comprising a luminous bulb in which at least mercury is enclosed inside the bulb, and a pair of sealing portions that retain airtightness of
25 the luminous bulb,

wherein an amount of the enclosed mercury is 230 mg/cm^3 or more based on a volume of the luminous bulb, and

heat-retaining means for retaining heat in the luminous bulb is provided.

18. The lamp unit according to claim 17, wherein

the heat-retaining means is a heat-retaining film that is formed at least in a portion
5 of the luminous bulb and the pair of sealing portions, and is made of an insulating material
or a heat-retaining material.

19. The lamp unit according to claim 17, wherein

the reflecting mirror is an ellipsoidal or paraboloidal reflecting mirror having a
10 front opening in an emission direction,
a front glass is provided in the front opening,
the inside of the reflecting mirror is substantially airtight, and
the reflecting mirror serves as the heat-retaining means.

15 20. The lamp unit according to claim 19, wherein

an amount of the enclosed mercury is 300 mg/cm^3 or more based on a volume of
the luminous bulb,
halogen is enclosed in the luminous bulb, and
a bulb wall load of the high pressure mercury lamp is 80 W/cm^2 or more.

20

21. The lamp unit according to claim 20, wherein

the reflecting mirror has a structure in which a side face of the reflecting mirror is
not provided with a ventilation hole,

a size of a radiation surface of the reflecting mirror is 25 cm^2 or less, and

25 a wattage of the high pressure mercury lamp during steady operation is 60 W or
more and 120 W or less.

22. The lamp unit according to claim 20, wherein

the reflecting mirror has a structure in which a side face of the reflecting mirror is not provided with a ventilation hole,

a size of a radiation surface of the reflecting mirror is 40 cm² or less, and

5 a wattage of the high pressure mercury lamp during steady operation is 121 W or more and 200 W or less.

23. The lamp unit according to claim 20, wherein

10 the reflecting mirror has a structure in which a side face of the reflecting mirror is not provided with a ventilation hole,

a size of a radiation surface of the reflecting mirror is 55 cm² or less, and

a wattage of the high pressure mercury lamp during steady operation is 201 W or more and 350 W or less.

15